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From mass mobilization to neoliberal war-making: Labor strikes and military-industrial transformation in the United States

Corey R Payne
Johns Hopkins University, USA

Abstract

How did workers affect—and how were they affected by—the dramatic transformations of U.S. war-making that have occurred since the mid-twentieth century? Where do such transformations leave workers and war in the twenty-first century? Using newly compiled data on workers' strikes in the U.S. armaments industries from World War II through the present, this paper examines the relationship between labor and military-industrial restructuring. The paper introduces the concept of regimes of war-making and makes three main arguments. First, workers' power was a significant force shaping the shift from a regime of mass mobilization war-making to a regime of neoliberal war-making, as armaments firms aimed to overcome the constraints imposed by workers in the mid-twentieth century. Wartime mobilizations—for Korea and Vietnam—temporarily stymied these efforts by enhancing the disruptive power of workers, who leveraged that power into pauses or reversals of firms' initial attempts at restructuring. Second, U.S. defeat in Vietnam was a watershed moment. Mass mobilization was abandoned, and the changing nature of war meant that subsequent military buildups offered workers little leverage with which to resist restructuring. Third, in the twenty-first century, the combination of greatly expanded wars and decades of restructuring has resulted in a bifurcation among armaments workers, between those producing supplies needed for pressing counterinsurgency operations and those producing other innovative, but unused, systems. Thus, while the regime of neoliberal war-making has reduced the size and strength of armaments workers in general, some still have significant disruptive potential at the present juncture.

Keywords

Labor, military-industrial complex, neoliberalism, social conflict, war

Introduction

In May 2022, Joe Biden visited the Lockheed Martin plant in Alabama that assembles the Javelin anti-tank missiles being sent in large numbers from the United States to Ukraine. He spoke to the workers producing them, emphasizing their contribution to the war effort: "[W]orkers at this

Corresponding author:
Corey R Payne, Arrighi Center for Global Studies, Department of Sociology, Johns Hopkins University, Baltimore, MD 21218, USA.
Email: cpayne@jhu.edu

facility. . .are making it possible for the Ukrainian people to defend themselves. . .You know, during World War Two, the United States was known as the arsenal of democracy. . . we built the weapons and the equipment that helped defend freedom and sovereignty in Europe years ago. [And] that's true again today" (Biden, 2022).

Glossed over in such comparisons are the dramatic changes that have occurred in the organization of U.S. war-making between the 1940s and the 2020s. In the earlier era, when it was the "arsenal of democracy," the U.S. had a conscripted army of citizen-soldiers, supplied by industries mobilized for the mass production of arms. In the twenty-first century, in contrast, the United States' much smaller all-volunteer force is supported by a more flexible, less labor-intensive industrial base. Indeed, the U.S. military-industrial complex underwent a series of transformations in the second half of the twentieth century, especially after defeat in Vietnam. Small-batch, high-tech weapons systems replaced mass procurement of conventional arms; military-industrial production relocated from the industrial heartlands to the "gunbelt" in the south and west; military supply chains were globalized; armaments firms consolidated in an extensive merger boom; and a revolution in logistics shifted firms' profit-focus away from production and toward services. Many scholars have examined these transformations, emphasizing the ways such changes have both enhanced and put strain on U.S. warfare (e.g. Brady and Greenfield, 2010; Bury, 2021; Lachmann, 2020; Major, 2009; Markusen et al., 1991). Yet, despite recognition by Biden and others of their importance to the war-making apparatus, little attention has been paid to the workers producing arms, including how they affect and are affected by these transformations in war-making.

This dearth of scholarly attention on military-industrial labor in recent decades is surprising for two reasons. First, historical studies of the wars in the mid-twentieth century highlight the important role and disruptive potential of industrial armaments workers in shaping the defense industrial base (e.g. Dubofsky and McCartin, 2017; Koistinen, 1973; Lichtenstein, 1982; Wehrle, 2005). Second, the transformations of U.S. war-making parallel the broader political-economic restructuring associated with the neoliberal project that has occurred over the same period—in which labor is widely recognized as a key actor. In the broader scholarly literature on the neoliberal project, labor movements have featured prominently, and such studies have contributed to a far greater understanding of restructuring (e.g. Cowen, 2014; Harvey, 1989; Silver, 2003). The lack of scholarly attention to military-industrial labor thus leaves underexplored the role of labor in the transformation of war-making since Vietnam.

Based on the existing literature, two conflicting expectations of twenty-first century dynamics are plausible. On the one hand, the contemporary literature on the neoliberal project emphasizes the disempowering effects of economic restructuring on industrial workers in the United States. On the other hand, the historical literature on war and labor emphasizes how war structurally empowered industrial workers in the United States, as workers leveraged their disruptive power to make significant gains—ultimately contributing to the formation of a social compact among workers, capitalists, and the state after World War II. Thus, given that decades of restructuring have been accompanied by seemingly endless war, one could reasonably expect both the *empowerment and disempowerment* of workers in the armaments industries.

We are thus left with two questions that this paper aims to answer: First, how did armaments workers affect—and how were they affected by—the transformation of war-making in the second half of the twentieth century? Second, what is the nature of the relationship between war and armaments workers in the twenty-first century, after decades of restructuring and amid greatly expanded U.S. wars? Using newly compiled data on strikes in the armaments industry and a systematic review of newspaper, company, and union archival materials, this paper has three main findings.

First, armaments workers' disruptive power was a significant factor shaping the transformation of war-making. Armaments firms laid the groundwork for restructuring in the 1950s and 1960s, as

they aimed to flee—through geographical and organizational transformations of production—the powerful workers and costly arrangements that World War II had yielded. However, wartime mobilizations—for Korea and Vietnam—temporarily stymied these efforts. These mobilizations enhanced the disruptive power of armaments workers, who leveraged that power into pauses or reversals of firms' initial attempts at restructuring.

Second, U.S. defeat in Vietnam was a watershed moment for the transformation of war-making, at and beyond the point of production. The interests of armaments firms (to overcome powerful and costly workers through a transformation of production) now aligned with the interests of military officials (to overcome the constraints of mass mobilization through a transformation of the military). War-making that relied on mass mobilization was abandoned in favor of a more flexible war-making that relied on outsourcing and the procurement of small-batch, capital-intensive, high-tech weapons systems. The changing nature of war meant that the wars and military buildups of the 1980s and 1990s offered workers little leverage with which to resist firms' onslaught.

Finally, the combination of greatly expanded wars and decades of restructuring has resulted in a *bifurcation among armaments workers* in the twenty-first century. On the one hand, wartime buildup did result in the empowerment of armaments workers who were producing weapons used in the counter-insurgency efforts in the "war on terror." On the other hand, the workers involved in the production of small-batch, high-tech weapons systems designed for future "great power" conflict saw no increase in their disruptive power despite the seemingly endless wars.

This decades-long restructuring of military-industrial labor relations can be understood as part of a shift from a regime of *mass mobilization war-making* in the mid-twentieth century to a regime of *neoliberal war-making* by the turn of the twenty-first century. The old regime was relatively labor-intensive and closely linked to the arrangements of industrial mass production. The new regime, in contrast, is characterized by greater flexibility, outsourcing, and capital-intensity. Its key characteristics parallel the broader world-economic transformations since the 1970s that have been widely understood as part of the neoliberal project. While such transformations in the world economy coincide with the rise of "neoliberalism" as a dominant ideology (e.g. Harvey, 2005; Peck, 2010), in this article the adjective "neoliberal" refers to the character of *material* transformations associated with the broader world-economic restructuring of the late twentieth century. The analysis put forward in this article thus seeks to shed light on the interaction between this neoliberal restructuring and war.

Bringing labor "back in" to studies of war

Although there is a lively and generative literature on the transformations of war-making since Vietnam, there is a dearth of studies investigating the role of labor in these transformations. This marks a change from work on the mid-twentieth century, in which scholars emphasized the critical relationship between war and workers' power. In what follows, I briefly review this literature on labor and war before turning to the important work being done to understand the reorganization of the U.S. military and the restructuring of the armaments industry in recent decades. By bringing labor "back in" to the study of war-making, we can gain critical insights into the material bases of war in the twenty-first century.

The literature on wars in the mid-twentieth century emphasizes how wartime mobilization enhanced workers' disruptive power, and how workers leveraged that power to make gains. Armaments production workers were understood as an essential component of the "defense industrial base," and their uninterrupted labor was required for supplying war efforts (e.g. Koistinen, 1973; Lichtenstein, 1982). During the world wars, industrial workers and belligerent governments alike discovered the disruptive power of armaments workers upon whose labor states relied for the

war effort. In short, industrial workers—with armaments workers at the vanguard—leveraged their states' reliance on them into substantive gains through waves of work stoppages (Silver, 2003, 2015). Ultimately, workers' wartime strikes in the early- and mid-twentieth century led to significant gains in unionization, wages, and benefits (Dubofsky and McCartin, 2017: 188, 194–195, 295). The arrangements that emerged out of these waves of unrest—in which firms and states agreed to union recognition, full employment, and basic welfare provisioning, in exchange for relative labor peace (and recognition of the prerogatives of firms to make changes to the production process)—set the basis for a new social compact and a nexus between warfare and welfare (Silver, 2015; Wehrle, 2003).[1] Yet, after holding sway for a generation, these arrangements began to unravel with the neoliberal project in the late-1960s/early-1970s.

Much has been written about the neoliberal project, and labor's role in shaping it. Many have argued that a key impetus for political-economic restructuring in this period was the combined fiscal and profitability crisis of the late-1960s/early-1970s, sparked in part by the costs of the social arrangements yielded by powerful workers (Arrighi, 1994; O'Connor, 1973; Silver, 2019). Moreover, the U.S. war—and eventual defeat—in Vietnam also proved to be an important catalyst for the neoliberal project. The war was a key factor in the draining of state fiscal capacity and contributed to a period of social unrest and international disorder (e.g. Halliday, 1983; O'Connor, 1973; Silver, 2015). In response to these crises, elites pursued a neoliberal project, aiming to "disembed capital from [a web of social and political] constraints" that had developed in the mid-twentieth century" (Harvey, 2005: 9). Many of the strategies employed to overcome such constraints had used the Vietnam War as their testing ground: privatization of public services and just-in-time techniques gained popularity, and political struggles over wartime questions (such as the end of the draft) gave neoliberal ideologues early wins (Beasley, 2019; Cowen, 2006, 2014; Levinson, 2006). In the decades that followed, restructuring accelerated: production left its traditional centers for cheaper locales across borders, financialization transformed the organization of capitalist firms, Fordism was replaced with just-in-time production, and austerity wreaked havoc on welfare systems (Arrighi, 1994; Gilmore, 2007; Krippner, 2011; Silver, 2019).

Despite the importance of military-industrial workers in shaping the mid-twentieth century arrangements that were facing assault, most investigations of the parallel transformations in the sphere of war-making—even those that explicitly tie such transformations to broader political-economic restructuring—tend to overlook the role of labor.[2] Instead, scholarship on the transformation of the military has tended to focus on organizational and technological changes in warfare in the neoliberal era. The post-Vietnam shift from a conscripted army that is "war-oriented in mission" and "masculine in makeup and ethos" to an all-volunteer force oriented toward small operations and increasingly culturally penetrated by civilian life marked a shift from a "modern military" to a "post-modern military" (Moskos et al., 2000). Technological advances merged with the ongoing flexibilization of the armed forces in the 1990s to raise the specter of a "revolution in military affairs" (Bitzinger, 2008; Krepinevich, 1992; Major, 2009; Murray and Knox, 2001). Many features of military reorganization—such as the outsourcing of military activities to private contractors, the increasing centralization of command (i.e. "jointness"), and the growing importance of networks and logistics—parallel the transformations of the industrial sphere in the same period, yielding discussion of a "post-Fordist" or a "just-in-time" military (Booth et al., 2001; Bury, 2021; King, 2006).

There has also been significant scholarly work on the restructuring of armaments production. For example, Markusen and her colleagues trace the shift in military production from the industrial heartlands of the Midwest and Northeast toward the South and the Coasts. Starting after World War II, this shift created a "gunbelt" of defense-rich states around the perimeter of the country, stretching "from the state of Washington through California to the desert states of the Southwest, on

through Texas and the Great Plains, across to Florida, and discontinuously up the East Coast to New England" (Markusen et al., 1991: 3). Major (2009: 349–51) finds a "narrowing of the gun-belt" away from the Northeast and West Coasts toward the South and Southwest in the 1990s in response to post-Cold War disarmament and technological change. Much ink has been spilled on increased investments in high-tech weapons systems, the privatization of military logistics and security activities, and a merger boom in the defense industry (Boatner, 1999; Brady and Greenfield, 2010; Gholz and Sapolsky, 1999; Lachmann, 2020).

The absence of workers in these accounts of military reorganization and military-industrial restructuring in the neoliberal era is a notable one. If war is a social phenomenon that occurs *materially* through the production, circulation, and use of arms, munitions, and other commodities, then labor is the primary social relation through which war is *made*. Understanding *war-making* thus requires an analysis of the material social relations at each moment in the making of war: at the point of production of arms, through the sinews of military logistics networks, and onto the battlefield.

Regimes of war-making

The social arrangements of war at each moment of its making can be usefully understood as organized into historically and socially specific regimes. A *regime of war-making* can thus refer to the organization of the political-economic apparatus that makes war and, as a concept, can help us understand how the making of war varies across time. Indeed, by differentiating regimes through an analysis of the structure of social relations at each moment of war-making (the production, circulation, and use of the means of violence), one is better able to make sense of the transformation of war-making in and through time via a comparison of regimes.[3]

In this regard, the concept is similar to attempts to understand other social relationships as organized into regimes of production (Burawoy, 1985), accumulation (Aglietta, 1979; Harvey, 1989), and dispossession (Levien, 2018). The apparatuses that organize and/or govern these relationships vary over time in the combination of means and arrangements used to achieve their ends; The constellation of a particular set of means and arrangements can be understood as comprising a regime. When the means and arrangements of a given regime are no longer able to successfully achieve their ends—be it production, accumulation, dispossession, or war—crisis, followed by transformation, is the result.

From this perspective, one can understand the transformations of the arrangements undergirding U.S. war in recent decades as a shift in regimes of war-making: away from *mass mobilization war-making* and toward a new regime of *neoliberal war-making*. In contrast to mass mobilization war-making—which was characterized by a large amount of labor required at each moment in the making of war—neoliberal war-making has been characterized by a significant reduction of labor required at each moment. Indeed, this new regime shares many characteristics—including flexibilization, centralization, outsourcing, and capital-intensity—with broader world-economic restructuring that has been referred to as the neoliberal project (e.g. Harvey, 2005).[4]

As shown in Table 1, we can see the transformation from mass mobilization to neoliberal war-making unfold in key moments in the making of war. We can use this framework to make sense of the changing social relations of the battlefield—for example, the end of conscription and the rise of capital-intensive, risk averse warfare—and of military supply chains—for example, the emergence of just-in-time logistics networks and the dominance of private military contractors. In both moments, arrangements that required the active participation of large swaths of labor were replaced, via technology and reorganization, with arrangements that required significantly less labor. The causes, contours, and consequences of these transformations are complex, and are deserving of

Table 1. Social arrangements of the regimes of mass mobilization and neoliberal war-making.

Moment of war-making	Mass mobilization war-making	Neoliberal war-making
Battlefield	Conscripted citizen-soldiers; Large force; Mostly conventional weaponry	All-volunteer; smaller, flexible forces; high-tech weaponry; casualty averse[a]
Supply Chains	Soldiers responsible for many logistics duties, complemented by private firms	Private firms responsible for nearly all logistics duties; subcontracted migrant labor[b]
Point of Production	Mass production; substantial labor strength, benefits, and protections	?

[a]See, e.g. Booth et al. (2001), Bury (2021), King (2006), Lachmann (2020), Moskos et al. (2000) and Shaw (2005).
[b]See, e.g. Beasley (2019), Cowen (2014) and Moore (2019).

treatment that is beyond the scope of this paper. Instead, this paper focuses on the transformation in labor relations *at the point of production of armaments*.

The analysis that follows demonstrates that, as in the other moments in the making of war, there was a shift in regimes of war-making that is visible at the point of armaments production. Indeed, the transformation from mass mobilization war-making to neoliberal war-making paralleled the broader restructuring associated with the neoliberal project and, like in the world economy writ large, labor played a key role in this shift—in large part as capitalists and military officials responded to the *disruptive power* that mass mobilization war-making arrangements had yielded workers.

This disruptive power is comprised of multiple elements. For one, there is "structural" power that accrues to workers from their position in the political and economic system (Silver, 2003; Wright, 2000). Many workplace and marketplace conditions influence structural power, including tight or loose labor markets, location in commodity chains, and the eventual importance (or use-value) of the commodity being produced (Silver, 2003; see also Payne, 2020). Such factors determine how disruptive to profit-making—and, in the case of the armaments industry, war-making—workers can be. Structural conditions are not workers' only source of power: "associational" power accrues to workers from their collective organization in unions, parties, and other associations (Silver, 2003). Much scholarly attention has focused on investigating the changing nature of industrial workers' associational power in the neoliberal era,[5] but fewer accounts analyze the interrelationship between war and workers' structural power.[6]

The task of the succeeding analysis is thus twofold. First, it seeks to make sense of the transition from mass mobilization to neoliberal war-making at the point of production, identifying the role that armaments workers played in that process. Second, it seeks to understand how the rise of neoliberal war-making transformed the structural power of armaments workers. Ultimately, this investigation seeks to clarify where these dynamics have left war and workers in the twenty-first century.

Labor unrest in the armaments industry, 1942 to 2020

This analysis is based on newly compiled data on workers' strikes in the armaments industries from the 1940s through the 2010s. This data compilation proceeded in two steps: First, I compiled aggregate data on the total number of work stoppages in armaments industries each year. Then, second, using this data as a guide, I systematically reviewed annual strike reports, newspaper articles, and union and company archives to find available information on the strikes. This review allowed me to identify potential patterns that are not observable from the aggregate picture, such

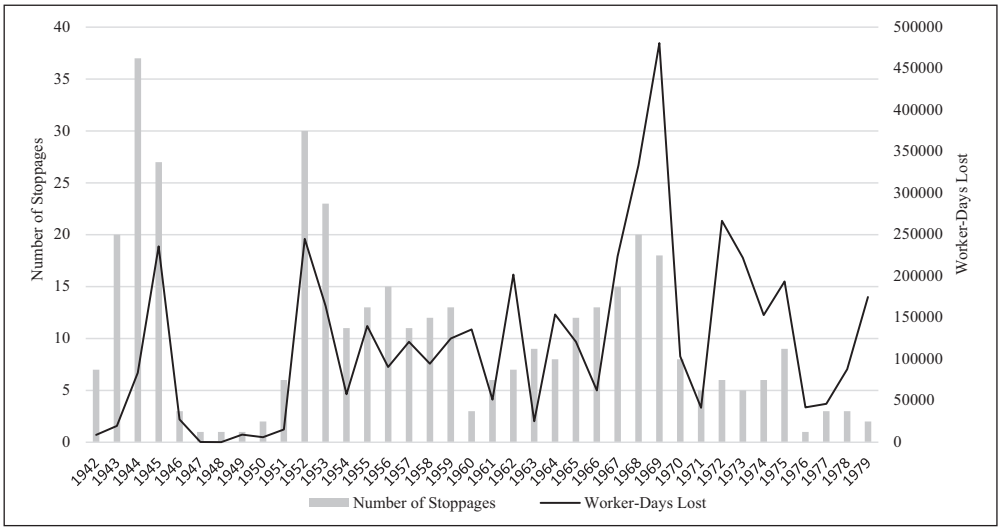

Figure 1. Work stoppages in the Ordnance industry, 1942 to 1979.
Source: Author's compilation from BLS reports.

as, for example, in workers' demands, characteristics of production, and areas of success or failure. After presenting the aggregate data from the first step in this section, I turn to the second step in the following sections.

There are two sources for the aggregate work stoppage data: the U.S. Bureau of Labor Statistics (BLS) and the U.S. Federal Mediation and Conciliation Service (FMCS). From 1942 to 1979, the BLS published annual "Analysis of Work Stoppages" reports, which are available in an electronic archive, from which I compiled appropriate data on relevant industry and sub-industry categories. (I present the aggregate Ordnance industry data for this period, but other categories were reviewed for the historical analysis that follows).[7] From 1984 to 2004 the FMCS compiled a list of all U.S. work stoppages—a dataset of over 12,000 strikes and lockouts. From 1993 to the present, similar data is available from the BLS Monthly Work Stoppage tables, though these data only include work stoppages involving 1000 or more workers.

To create the aggregate data after 1984, I reviewed each of the work stoppages listed in the FMCS and BLS datasets and identified all the entries at an armaments production firm. My definition of armaments production firm in this period is both more expansive *and* more specific than the BLS industrial categories reported from the 1940s through the 1970s: it includes firms in more categories, such as those producing aircraft, ordnance, ships, missiles, and other major weapons components, but is also able to exclude production of civilian equivalents that otherwise would be included in some BLS categories. Since these data are reported at the plant level (by providing both the firm name and the city), I was able to disaggregate work stoppages at firms producing both civilian and military goods.[8] Although the pre- and post-1984 sources of data are not directly comparable, this presents few problems for the analysis that follows. Since these data are being used to identify a pattern that is to be explained with further historical analysis (rather than for a longitudinal analysis) the differences in data collection do not significantly affect the investigation, which is more concerned with the relative distribution—rather than absolute levels—of workers' unrest over time.

Figure 1 presents data on work stoppages in the Ordnance industry from 1942 to 1979 as compiled from the BLS.[9] The figure shows the number of work stoppages that occurred in a given year

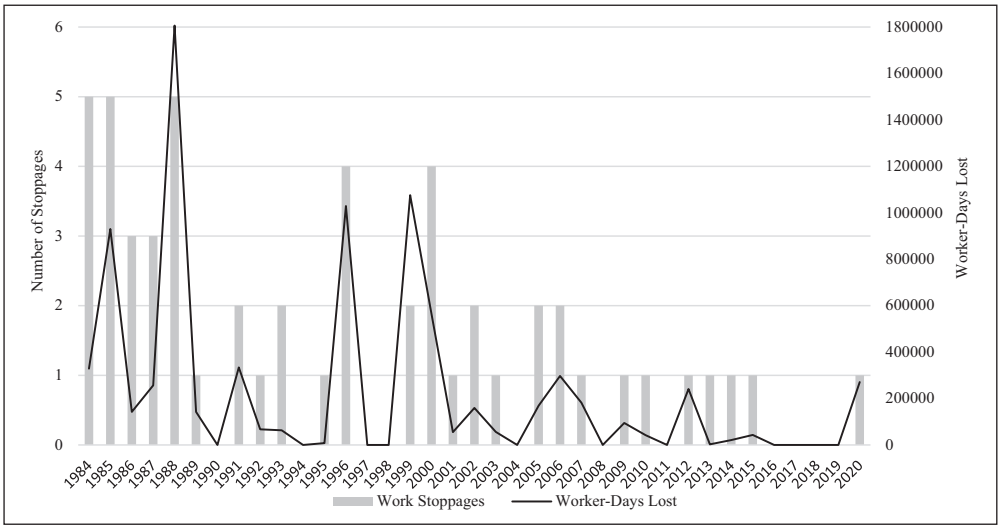

Figure 2. Work stoppages involving 1,000 or more workers at armaments production firms, 1984 to 2020.

Source: Author's compilation from reported FCMS and BLS data (U.S. Bureau of Labor Statistics (BLS), n.d.; U.S. Federal Mediation and Conciliation Service (FMCS), n.d.).

and the number of worker-days lost, which can be interpreted as a measure of disruptiveness. Over the entire period, the BLS reports 392 work stoppages (i.e. strikes or lockouts) by manufacturing workers in the Ordnance industry, accounting for over 4.5 million worker-days lost. Figure 2 presents data on work stoppages involving 1,000 or more workers at armaments production firms from 1984 to 2020, as compiled from the FMCS and the BLS. In this period, there were a total of 54 work stoppages (involving 1,000 or more workers) in the armaments industries, accounting for 8.4 million worker-days lost.

Per Figure 1, a wave of disruptive strikes in the ordnance industry in the mid-1940s is followed by a sharp reduction in work stoppages in the post-WWII years. As the Korean War begins in the early 1950s, there is a renewed wave of workers' unrest. After the Korean War, a steady number of annual stoppages in the late-1950s and early-1960s is followed by a massive surge in strikes during the most intense phase of the Vietnam War in the late 1960s and, while fewer in number but higher in intensity, the early 1970s. In Figure 2, after the Vietnam War, we see a pattern of significantly reduced workers' disruption in the armaments industry in general: relatively high levels of unrest in the 1980s are followed by a decrease in the early 1990s, a small wave in the late 1990s/early 2000s, and then a significant drop off in the twenty-first century.

Tables 2 and 3 break down the work stoppage data into periods that correspond with different levels of military buildup (for a time series of U.S. military expenditures, see Figure 7 in the Appendix 1). Table 2 showcases clearly what is already apparent in the Figure 1: in the mid-twentieth century, periods of wartime corresponded with greater levels of workers' militancy in the Ordnance industry, with higher number and magnitude of stoppages than during the preceding and succeeding periods of peacetime production. Diverging from this pattern, Table 3 shows that armaments workers in the later period had their highest level of militancy during the Reagan buildup and engaged in steadily declining number (and magnitude) of stoppages in the successive periods, despite the high intensity wars of the twenty-first century.[10]

Table 2. Average number of work stoppages and worker-days lost per year in the Ordnance industry.

Period	Years	Work stoppages	Worker-days lost
World War II	1942-1945	23	87125
Post-War	1946-1949	2	9325
Korean War	1950-1953	15	107675
"Golden Age"	1954-1964	10	108909
Vietnam War Ramp-Up	1965-1969	16	244420
Vietnam War Draw-Down	1970-1975	7	163517
Post-Vietnam Years	1976-1979	2	87875

Source: Author's compilation from BLS reports.

Table 3. Average number of work stoppages and worker-days lost per year in the armaments industries.

Period	Years	Work stoppages	Worker-days lost
Reagan buildup	1984-1988	4.2	693072
Unipolar moment	1989-2001	1.4	256845
Afghanistan and Iraq Wars	2002-2011	1.0	100248
Post-Iraq War	2012-2020	0.6	64322

Source: Author's compilation from reported FCMS and BLS data.

From Tables 2 and 3, a pattern emerges: During periods of armaments buildups in the twentieth century (World War II, Korea, Vietnam, and the Second Cold War), workers engaged in heightened levels of strikes. In the aftermaths of each of these conflicts, the number and magnitude of stoppages decreased. Most recently, a small wave at the turn of the twenty-first century was followed by lower, but steady, unrest in the initial years of the wars in Iraq and Afghanistan—but the militancy was not sustained as the wars dragged on. Indeed, over the course of the entire period, there was an overall trend toward smaller and less frequent waves of work stoppages over time. Nevertheless, until the twenty-first century we see that armaments workers were more militant and disruptive during periods of war and military buildup than during peacetime.

Using these aggregate figures as a guide, I systematically reviewed available materials on these strikes—from newspapers, government agencies, unions, and firms—to investigate the transformations and workers' role in them. In what follows, I use illustrative data from this analysis to show the trajectory of military-industrial restructuring from the post-World War II era, through the post-Vietnam era, and into the post-9/11 era.

Mass mobilization and the initial limits to restructuring

Mass mobilization yielded high structural power to armaments workers, as the regime was arranged in such a way that placed them at strategic locations in the supply chains of important wartime commodities—supply chains that could be disrupted with work stoppages. This disruptive power ultimately served as a significant contributing factor to the shift from mass mobilization to neoliberal war-making in the second half of the twentieth century. Armaments firms laid the groundwork for restructuring in the 1950s and 1960s, as they aimed to rid themselves of the arrangements that World War II had yielded. However, initial attempts at restructuring were stymied by the prevailing

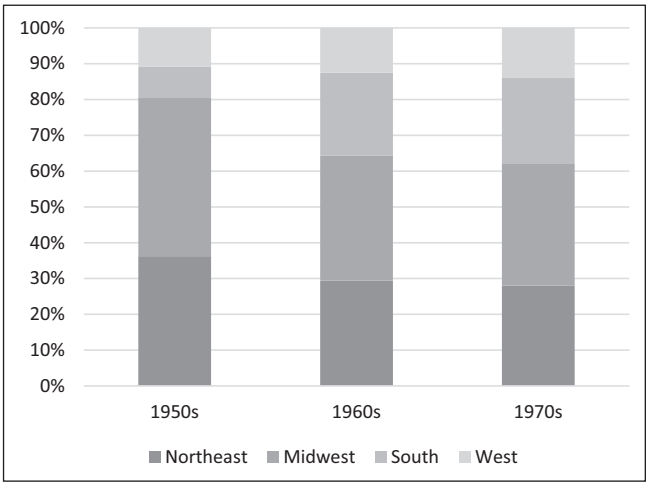

Figure 3. Regional shares of work stoppages in Ordnance industry, 1950 to 1979[a].
Source: Author's compilation from BLS reports.
[a]Regions are comprised of states as determined by the U.S. Census Bureau. The BLS reports industry data at the state level only for states that saw 25 or more total work stoppages in that year.

war-making arrangements: the wars in Korea and Vietnam resulted in a mobilization of military-industry, which enhanced the disruptive power of armaments workers. Workers leveraged that power into "pauses" or reversals of firms' initial attempts at restructuring.

Following the demonstrations of armaments workers' disruptive power in World War II, firms quickly began to seek ways to overcome it through geographical relocations. The availability of industrial labor was a major concern for armaments firms in the early to mid-twentieth century, when production needed to be concentrated near mid-sized cities. Nevertheless, as Markusen, et.al., note, "many defense contractors have shown an unusual antipathy towards unions and heavily unionized cities and regions, not principally because of wage demands, but for fear of work stoppages and resistance to changing work rules in an industry where timely delivery is critical. . ." (Markusen et al., 1991: 43).[11]

As shown in Figure 3, immediately following World War II, strikes were overwhelmingly concentrated in the industrial heartlands of the Midwest and Northeast. *The gains workers made in these stoppages were directly tied to subsequent geographical relocation*. One can see this play out at major jet engine and component manufacturers, General Electric (GE) and Pratt & Whitney. In direct response to workers' gains and union disruption, in the late 1950s GE began to engage in "parallel production," in which the firm constructed multiple facilities capable of producing the same commodities (Almeida, 1997: 11–12; Forrant, 2002: 118–119). Parallel production served the dual purposes of "provid[ing] production capacity during company/union labor disputes, and severely weaken[ing] the union's ability to strike in the first place" (Bluestone et al., 1981: 82–83). Over the next two decades, GE's innovations in the production process put pressure on its competitors—like Pratt & Whitney—to do the same. In this period, GE opened facilities in Vermont, Kentucky, North Carolina, and New Mexico while Pratt & Whitney expanded its operations to nine states, including West Virginia and Maine (Almeida, 1997: 11). "As though playing a giant board game, Pratt constantly shifted work between Connecticut, Florida, and Maine," successfully gaining the upper hand in its dealings with workers' unions (Forrant, 2002: 124; cf. Markusen et al., 1991: 276).

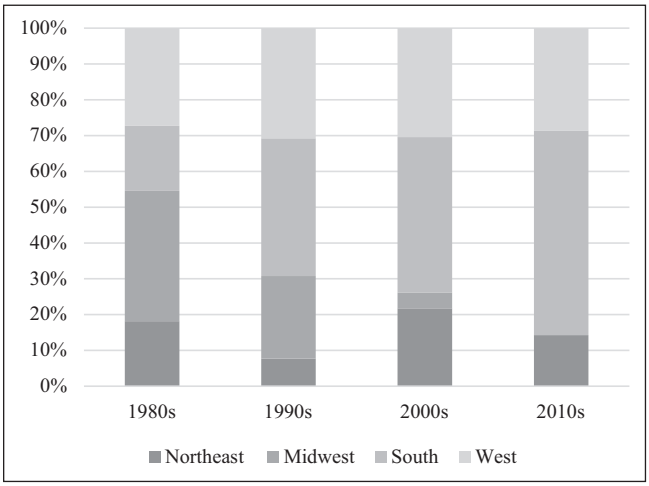

Figure 4. Regional shares of work stoppages in armaments industries, 1984 to 2020.
Source: Author's compilation from reported FCMS and BLS data.

Indeed, the data show a significant shift in the location of work stoppages over the course of the late-twentieth century as firms moved out of the traditional centers of industrial production. As shown in Figure 3, in the 1950s, the Midwest saw 44% and the Northeast saw 36% of work stoppages in the Ordnance industry. In comparison, the South and West saw a combined 20%. In the 1960s, the South dramatically increased its share of the stoppages to 18 percent at the expense of the Midwest and Northeast. The 1970s saw these new regional shares largely remain the same, despite a significant decrease in the number of work stoppages. Figure 4 shows that armaments workers' unrest in later years followed this continued geographical shift in production. In the 1980s, the Northeast and Midwest saw a combined 54% of the work stoppages—a figure which fell to 31% in the 1990s, 26% in the 2000s, and 14% in the 2010s. At the same time, the South and West saw its combined share grow proportionally—from 45% in the 1980s to 69% in the 1990s, then to 73% in the 2000s and finally 85% in the 2010s.

The geographical distribution of work stoppages closely tacks to what Markusen and her colleagues have called the rise of the "gunbelt": in 1952, Midwestern states received nearly 31% of total prime defense contracts, with the Mid-Atlantic states getting the next biggest share, over 26%. But by 1984, that combined 57% share fell to 21%. Meanwhile, over the same period, the "gunbelt" saw its combined share increase from 38% to nearly 70%, the South driving much of the growth (Markusen et al., 1991: 11–12). The significant gains made by workers in the 1940s and 1950s preceded and contributed to the geographical relocation of armaments production from the industrial heartlands toward the gunbelt. By the 1960s, this relocation had begun in earnest.[12] While the 1970s saw the distribution remain largely unchanged, the 1980s and 1990s saw a dramatic acceleration of the trends—following what Aaron Major (2009) calls the "narrowing of the gunbelt" in this period (see following section for more on the 1980s and 1990s).

Yet, as capital fled the old centers of production, leaving behind weakened workers in its wake, the story that emerges is not simply one of linear disempowerment. These initial attempts at restructuring were stymied by two factors. First, workers' movements emerged in the new centers of military-industrial production, matching the expectations of the broader literature on geographical shifts in production. As seen in Figure 3, as military-industrial production left the manufacturing heartlands, the epicenter of labor militancy tended to follow that relocation. Just as backlash

resistances emerged in response to capital "leaving," new labor movements emerged in response to capital "arriving."[13]

Second, and more significantly, wartime buildups during the Korean and Vietnam wars empowered armaments workers and paused some elements of restructuring. During the wars, "the demand for basic armaments diverted defense contracts to already equipped plants in the industrial heartlands"—pausing (or the in case of Korea, temporarily reversing) the geographical relocation of production to the "gunbelt." During the Vietnam War, the "procurement map remained almost identical to that" of the pre-war period; only after the war did the "gunbelt" permanently return to "its position of prominence" in the distribution of military production (Markusen et al., 1991: 9–14). In other words, the geographical relocation of production was temporarily halted by wartime exigencies.

Workers leveraged their wartime disruptive power into pauses or reversals of other transformations at the point of production. For example: 1950s and 1960s, "GE essentially dictated the terms of six consecutive national agreements," resulting in the end of cost-of-living protections in 1960 and a shift from annual wage increases to wage increases only once every 18 months (United Electrical, Radio and Machine Workers of America, n.d.). Yet the threat of a strike in 1966 amid a wave of unionization drives at GE's new production sites caused President Johnson to send the Defense Secretary Robert McNamara to intervene in the mediation. Johnson (1966) noted:

> "The prospect of any large strike is cause for concern. But in the case of General Electric. . .the threat of a strike takes on a particularly profound meaning for the American people, and for our men in the jungles and rice paddies in Vietnam. General Electric is a leading producer and developer of a wide range of munitions, electronic equipment, and missiles for the Armed Forces. . .*Our men in Vietnam need these planes, these helicopters, these weapons. They are essential to their very lives. And they need them now—not next week or next month*" (emphasis added).

The Department of Defense sought an injunction against the strike, with McNamara noting that the stoppage "affects a substantial part of the military jet engine industry" that "will result in an unacceptable and irretrievable loss of time in the supply of jet engines and spare parts which are essential to the national defense of the United States, including particularly, combat operations in Southeast Asia" (U.S. BLS, 1968). The strike ultimately led to the invocation of the national emergency provisions of the Taft-Harley Act in 1966, one of three invocations that year in the face of workers' militancy in armaments production—the other cases being a strike by Steelworkers at Union Carbide Corporation and by West Coast shipbuilders (U.S. BLS, 1968).

The minor gains made by workers in 1966 gave way to a major victory in 1969. GE had begun to make moves to scrap national bargaining altogether (United Electrical, Radio and Machine Workers of America, n.d.). In response, in October 1969 the 13 unions representing GE's workforce banded together in a national strike—the first one since the post-war wave in 1946. Over 150,000 workers at 233 plants in 33 states—old and new centers of production—walked out (Bluestone et al., 1981: 153). The strike lasted 102 days. GE's attempts to break the strike were mostly failures, and the resulting agreement was favorable to the various workers' unions—GE dropped its attempt to undermine national bargaining, cost of living adjustments were restored for the first time in a decade, paid leave, sick leave, and vacation time were expanded, insurance coverage was improved, and there were general wage increases across the board. In other words, GE's ongoing attempts in the 1950s and 1960s to reorganize production through geographical manipulation, cross-training, automation, and the scrapping of national bargaining reached a roadblock during the war in Vietnam, as workers leveraged their disruptive power to make significant gains.

In sum, the disruptive power that the arrangements of mass mobilization war-making had yielded to workers served as a significant contributing factor driving military-industrial firms' initial attempts at restructuring in the mid-twentieth century. However, we also see that these attempts were largely stymied by war-time mobilizations for Korea and Vietnam. The wars enhanced the disruptive power of armaments workers, who leveraged that power into pauses or reversal of initial attempts at restructuring. However, these stymied attempts at overcoming the power of armaments workers ultimately laid the groundwork for restructuring, as U.S. defeat in Vietnam opened the floodgates for a major reorganization.

The rise of neoliberal war-making

U.S. defeat in Vietnam was a watershed moment for the transformation of war-making, at and beyond the point of production. The firms' interest in overcoming workers' power now aligned with the military's interest in abandoning the constraints of mass mobilization. This alignment led to a reorganization of labor arrangements at all moments in the making of war—from the battlefield through the logistics networks and into the abode of production—and resulted in the rise of neoliberal war-making. The changing nature of war-making meant that the wars and military buildups of the 1980s and 1990s offered armaments workers little leverage with which to resist firms' onslaught.

In short, the war in Vietnam provoked significant backlash at home and revolt abroad, yielding a leadership crisis for the U.S. on both fronts. The combined costs of the war and of expensive social programs (most immediately, Johnson's Great Society package) caused a fiscal crisis. This chain of crisis events spiraled—the end of the war in Vietnam coincided with OAPEC's oil embargo in 1973, paralyzing the U.S. economy. Inflationary pressures and drags on profit were both blamed on high wages and workers' strength. In this context, government officials and capitalists alike plotted reorganizations that would lead away from the crises and abandon the mid-twentieth century social compact. In the economy writ large, workers faced a significant, concerted attack in the form of the neoliberal political project. Many examples of industrial restructuring broadly, such as outsourcing and capital intensification, were designed with the explicit goals of confronting the power of manufacturing workers, while for others—such as consolidation, subsidiarization, and financialization—workers' disempowerment was an added benefit (Bluestone and Harrison, 1982, 1988; Krippner, 2011; Prechel, 1997; Prechel and Boies, 1998; Silver, 2003; Stearns and Allan, 1996).

The armaments industry was not immune from this restructuring and, in contrast to the earlier period, the structural power available to workers to pause such reorganizations had greatly diminished. Indeed, the logics of flexibilization, centralization, outsourcing, and capital intensity reshaping the world economy were now in alignment with the approach officials took to the social arrangements at other moments of war-making. The regime of mass mobilization war-making had fallen into crisis. On the battlefield, facing the end of the draft, officials emphasized new technologies and techniques to wage war that reduced the number of citizen-soldiers required to fight. As a replacement for citizen-soldiers, the military turned to private firms to fill the gaps, and in the process revolutionized military logistics. These transformations of social arrangements at other moments in the making of war interacted with the restructuring of armaments production. Together, they amounted to the end of mass mobilization and the rise of neoliberal war-making.

Importantly, this period saw investments in military technologies that had the dual purposes of replacing citizen-soldiers and escalating rivalry with the Soviet Union. Reversing initial cuts to military spending in the wake of the Vietnam defeat, Reagan's election marked the start of a new Cold War arms race. The buildup emphasized high tech weapons—such as the Strategic Defense

Initiative ("Star Wars"), the B-1 bomber, ballistic missile systems, and nuclear submarines—which forced the Soviet Union to make expensive investments in defensive technologies. The effects of this investment were felt at the point of production. These weapons systems were intended primarily as a provocation (or deterrent), not to be used in a "hot" war—this meant that the workers who were producing arms for the buildup were not part of any pressing war-effort. As in earlier arms buildups, Figure 2 and Table 2 show a wave of workers' unrest in this period. But without the wartime leverage, a review of the work stoppages in question shows that workers saw very different conditions than in earlier buildups.

Indeed, examining the strikes in the 1980s as a group, we are left with a picture of disempowered workers producing small-batch, high-tech weapons systems. For example, strikes by workers at GE, General Dynamics, Aerojet, and Convair producing weapons such as ballistic missiles, stealth bombers, and next generation naval destroyers resulted in lackluster outcomes with layoffs, consolidations, and subcontracting as the end result (e.g. Drogin, 1985; Kraul and Vartabedian, 1992; *United Press International*, 1987, 1988). In these instances, we see that buildups of high-tech weapons designed for "cold" rivalry with the Soviet Union did not result in the same empowerment for workers that similar buildups of conventional armaments for earlier conflicts did.

For the exception that demonstrates the rule, one can examine the "hot" conflict of this period. The 1991 Gulf War was a rapidly fought conflict that utilized the fruits of high-tech weaponry and advances in logistics. Only one strike in the dataset occurred during the conflict: workers at Alliant Techsystems producing 25-millimeter shells bound for the Gulf walked out after the company offered a contract extension with no raises. Though Alliant was ahead of schedule for delivery of munitions, the Army expressed concern about the potential disruption of the strike, and workers faced pressure to return to work to support the war-effort. Nonetheless, after a short one-week strike, Alliant offered raises, bonuses, and pension increases to get workers back into the plant (*The New York Times*, 1991a, 1991b). We see the empowerment of conventional munitions workers during wartime during a period of disempowerment of advanced systems workers.

Beyond the investment in high-tech, capital-intensive weapons, other forms of restructuring occurred. For example, the combination of post-Cold War military procurement cuts and an ongoing wave of globalization sparked a wave of international outsourcing. Despite concerns over security, armaments firms began to move some production out of the United States and into cheaper labor markets in the Global South, most notably in parts of Latin America and Asia—following suit of other manufacturing industries in this period (e.g. Silver, 2003). The dramatic rise in international arms sales in the 1990s—as armaments firms searched for revenues beyond the U.S. government in the post-Cold War period—contributed to this phenomenon. Many international arms sales included agreements that the purchasing country would also receive a share of the production work. Following the 1994 North American Free Trade Agreement, for example, aerospace firms began opening subsidiaries in Mexico to supply major components to U.S. firms. These firms were part of a series of U.S. manufacturing relocations to towns on the Mexican side of the border, establishing *maquiladoras* with low wages and poor working conditions—while still enjoying the relative proximity to U.S.-based production. After the U.S. and Mexico signed the Bilateral Aviation Safety Agreement in 2007, bringing greater regulatory alignment on aerospace production, Mexico saw an even greater boom in arrivals of armaments manufacturing—with aerospace exports growing from $1.3 billion in 2004 to $9.6 billion in 2019 (Coffin, 2013; Gould, 2020). The locale that has received the greatest attention, however, is China, which has been the sole—or nearly sole—source of several critical military products, including missile propellant, specialty glass for night-vision goggles, copper-nickel tubing, lithium-ion batteries, and other telecommunications equipment (Adams, 2013).

Outsourcing played a significant role in workers' strikes in the armaments industries in the 1990s. At a McDonnell Douglas plant in St. Louis (which produced F-15 and F/A-18 fighters, the AV-8B attack plane, T-45 training jet, and parts and missiles for the C-17 transport), the company had laid off 5,000 workers in the first half of the decade and, in 1996, proposed another 1,600 machinist cuts. The company preferred to subcontract out the work to non-union plants, notably those in Arizona, and to international subsidiaries including partners in Israel, Finland, Switzerland, and China (Stevenson, 1992; *The New York Times*, 1996a, 1996b; Tyson, 1996). "We're in the business of making profits for our shareholders. If we have to put jobs and technology in other countries, then we go ahead and do it," said Peter Chapman, president of McDonnell Douglas' Chinese subsidiary (Reeves, 1995). The company claimed that outsourcing was essential to remain competitive in the business climate of the 1990s. The strike ended after 99 days with an agreement that the company would provide advanced notice of forthcoming layoffs due to subcontracting, allowing the union to bid on keeping the work (*The New York Times*, 1996b).

A dramatic merger boom of armaments firms was also a key element of the restructuring. In the 1980s and 1990s, access to capital and a permissive regulatory environment led to a broad wave of corporate consolidation (Stearns and Allan, 1996). In the armaments industry, the mergers were promoted and facilitated by military officials aiming to centralize the defense-industrial base (Hartung, 2011: Chapter 8). Between 1980 and 1997, the armaments industry consolidated from over fifty major prime contractors to just five (Defense Science Board, 1997: 10). As these firms consolidated their operations, many facilities were shuttered or combined. For example, after Lockheed and Martin Marietta merged into Lockheed Martin in 1995, the new company announced the closure of 12 manufacturing facilities and 26 field offices, laying off approximately 12,000 workers (Urry, 1995). Similarly, when Raytheon acquired Hughes Aircraft and Texas Instruments in 1997, the company shuttered 20 out of 80 factories, while partially closing 6 more, and cut 9,000 jobs. This merger also sparked a total reorganization of the companies' production geography—maintaining operations in several plants but bouncing manufacturing around between them. The previously diversified Massachusetts plant, for example, reduced the variety of components constructed there, maintaining circuit cards, for example, but moving cables to Florida, wiring boards to Texas, missile assembly to Arizona, and missile control systems to Scotland (Nicoll, 1998).

In the following years, the effects of such consolidations and plant closures on workers became clear. Both Lockheed Martin and Raytheon saw strikes in 2000 stemming from the mergers. At Lockheed Martin in Fort Worth, machinists in the F-16 division struck over years of layoffs as a result of the restructuring and insufficient pay. Lockheed pointed to the difficult business environment in the 1990s, as pools of U.S. defense monies were drying up and international sales became the main source of revenue (*CNN Money*, 2000a). At Raytheon, workers at the Andover plant went on strike over the steady movement of jobs from Massachusetts to the facilities listed above, especially those in the West. Even in the face of tax breaks to incentivize Raytheon to keep jobs in Massachusetts, the lure of cheap labor in Arizona and Texas proved irresistible to the firm (*CNN Money*, 2000b). Indeed, these consolidations contributed to the dramatic shift in labor unrest to the South and West in the 1980s and 1990s shown in Figure 4—consistent with the "narrowing of the gunbelt" (Major, 2009).

The peculiarities of defense production—notably, the politics and lobbying of military procurement—meant that such consolidation ultimately resulted in fewer plants shuttering than in comparable civilian industries. In fact, despite the mergers and some production consolidation, studies from the late 1990s reveal that no production lines—i.e. the total chains of manufacturing for a particular weapons system—were closed. The result, foreshadowing twenty-first century dynamics, was that a growing part of the armaments production in the United States was artificially stimulated by the politics of procurement and *not* by military requirements (Gholz and Sapolsky, 1999).

Figure 5. Aerospace industry workers in the United States, 1939-2008, thousands.
Source: Author's compilation from Aerospace Industries Association (1960, 1980, 1984, 1995, 2010) annual reports.

Such politicking may have protected the armaments industry from the worst effects facing other manufacturing sectors at this time, but these changes nonetheless decreased the number and eroded the power of the workers at the heart of the military-industrial complex. For example, Figure 5 shows that these decades saw a dramatic reduction in the number of production workers in the aerospace industry—from a post-Vietnam peak of 598,000 workers in 1980 to 244,000 by 2004. What's more, not only did the over-investment in high-tech weapons systems offer workers little disruptive potential, it also shifted the industry's emphasis from mass production to research and development—diminishing the relative importance of production workers and raising that of professional engineers (e.g. Markusen et al., 1991). This shift is apparent in Figure 5, as non-production workers make up an increasingly larger share of the aerospace industry over time—in 1942 and 1943, production workers made up over 80% of the aerospace industry's workers, while in 1988 and 1989 they made up just 32%.

Moreover, the restructuring of the armaments industry had a distributional effect for workers. As we see in Figure 6, over the course of this period wages for production workers as a share of total revenues in the aerospace industry dramatically declined—from a peak of 73.8% in 1951 to a low of 6.8% in 2004. By reducing the cost of production workers through this series of transformations, armaments firms successfully augmented their own profitability.

We can thus see how the shift to a regime of neoliberal war-making—which, in the realm of armaments production, was yielded by investments in high-tech weapons, the globalization of supply chains, and firm consolidations—transformed the military-industrial complex in such a way that removed the structural sources of armaments workers' disruptive power that had existed during the regime of mass mobilization war-making. This meant that the Cold War buildup of the 1980s and the "revolution in military affairs" of the 1990s did not yield the same kind of empowerment that earlier buildups for wars had wrought, and workers were thus unable to resist the onslaught of restructuring. Indeed, the changes to the production of armaments paralleled the broader neoliberal project in both form and effect: in form, we see the weakening of workers' power through transformations in the organization of production and through geographical

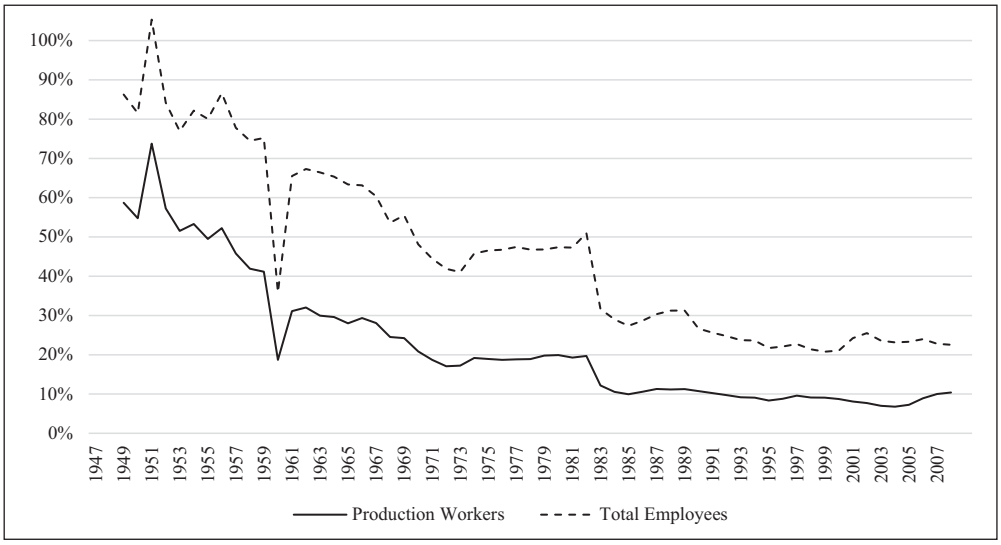

Figure 6. Wages as share of revenues, U.S. aerospace industry, 1949-2008.
Source: Author's compilation from Aerospace Industries Association (1960, 1980, 1984, 1995, 2010) annual reports.

relocations (e.g. Harvey, 1989; Silver, 2003), in effect, we see the removal of "a web of social and political. . .constraints" that had been placed on capitalists and their profits in the preceding decades (Harvey, 2005: 9). Ultimately, as we will now see, the rise of neoliberal war-making had mixed effects for both workers and war in the twenty-first century.

Endless wars and a bifurcation among armaments workers

The twenty-first century has been characterized by an expansion of U.S. war on a scale not seen since Vietnam. However, the rise of neoliberal war-making meant that these wars would not have the same effects for workers as those of the twentieth century. Indeed, restructuring reduced both the number and strength of armaments workers. Nevertheless, workers who were producing essential supplies for the wars saw some structural empowerment as their positions became vital to the war-effort. In other words, the combination of wartime arms buildup and decades of military-industrial restructuring yielded a *bifurcation among armaments workers* in the twenty-first century, between those producing supplies needed for pressing wartime requirements, and those producing non-urgent, innovative systems.

When Bush launched the War on Terror, there was a dearth of conventional weapons required to fight counterinsurgency wars and, as a result of restructuring, the military-industrial complex was ill-prepared for any sort of mobilization. Following the invasion of Iraq in 2003, for example, the Army found itself struggling to defend soldiers against use of "improvised explosive devices" or IEDs. These weapons were inflicting serious damage on military vehicles like the Humvee, and attempts to reinforce existing vehicles proved to be insufficient—soldiers were so concerned that they confronted defense secretary Donald Rumsfeld about the make-shift armor during a visit to a staging camp in Kuwait. Rumsfeld replied: "You go to war with the army you have, not the army you might want" (Schmitt, 2004). Part of the delay in developing a new vehicle was the difficulty in procuring necessary supplies: the vehicles required a specialty 3/8-inch armor plate that could no longer be produced in great quantities in the U.S. In 2004, U.S. firms were only producing about

30,000 tons annually. The U.S. military suddenly required 252,000 tons annually. To meet demand, it was forced to turn to international suppliers (Hasik, 2017).

This is one example of widespread underinvestment in low-tech solutions to military challenges. Instead of investing in stockpiles of inexpensive and useful weaponry, firms and officials preferred investments in high-tech platforms such as submarines or carriers (Lachmann, 2020: 322). As Roxborough (2004) pointed out, this became a major problem during the initiation of the Iraq War, as Iraqi forces deployed mines, preventing the delivery of aid. Lachmann (2020: 323) notes that, "had the US military invested in cheap minesweepers rather than the multibillion-dollar vessels preferred by naval officers and military contractors, the mines could have been removed to allow the rapid arrival of" relief supplies. Similarly, he notes (2020: 323), military leaders have sounded the alarm of "critical munitions shortfalls" such as small diameter bombs, which have been shifted from stockpiles in the Pacific to the Middle East as recently as 2017. Such low-tech weapons are "underfunded, underproduced, and become scarce after only a few months of stepped-up fighting in small, low-intensity wars" in the Middle East.

These procurement priorities meant that, like in the 1980s and 1990s, many armaments workers were engaged in the production of technologically advanced weapons systems, complete with the most complicated new features, that are designed for potential conflict with so-called rival powers like China or Russia. These weapons systems not only were not used in the counterinsurgency wars in Iraq and Afghanistan, but they are also so technologically advanced that they regularly fail to reach the stage of combat usefulness, with development timelines constantly delayed and abandoned. In one example, in 2002 workers at the Ridley Township Boeing plant producing the V-22 Osprey went on strike over rising healthcare costs. At the time, fatal crashes during testing phases put the Osprey on the chopping block. While other plants narrowly averted a strike, the Ridley Township plant stopped work—without leverage, workers made minimal gains (Lunsford, 2002).

Perhaps the exemplar of military high-tech bells and whistles in the twenty-first century is the F-35 fighter jet. The jet is the most technologically advanced in the world and the most expensive procurement program in Pentagon history—despite countless development problems. A 2012 contract negotiation at Lockheed Martin's F-35 fighter jet production plant in Fort Worth resulted in a strike when the company attempted to eliminate the workers' pensions, reportedly at the urging of the U.S. Department of Defense. Despite high profits and the expectation of expanded production on the project, the workers were eventually forced to accept the elimination of pensions for new hires. Workers' disruption of the delivery timeline of the F-35 was not truly disruptive—the F-35 production schedule, planned for completion in 2010, had been delayed several times already by 2012, with full production capacity not scheduled until 2019, and less than a fifth of the purchased planes completed (Ciralsky, 2013).

Despite restructuring and investments in high-tech weapons, some of the strikes in the twenty-first century—especially those composing the cluster of stoppages between 2003 and 2007 in Figure 2 above—were nevertheless waged by workers producing urgently-required war-materials, and their disruptive potential offered them greater leverage (Payne, 2020). For example, an earlier strike at the same Lockheed Martin plant in Fort Worth is illustrative. In 2003, workers at this plant were producing F-16 fighters. The outbreak of war had created soaring profits for military supply firms like Lockheed, especially given the ubiquity of F-16 sorties in Iraq and Afghanistan, and the workers wanted a larger share. As one strike captain told local news: "We have foregone a lot of raises over the last few contracts because our company had not been in a good position. . .But this year we absolutely are in a different position—there are record profits at Lockheed Martin. We are asking for a fair contract" (Blau, 2003). Lockheed quickly offered caps on the insurance co-payment and increases to retirement benefits, ending the strike in two weeks—before significant production disruption (*Sun Journal*, 2003). This is a far cry from the later strike by these workers in

2012, when production had shifted to the F-35. Unlike the later strike, in 2003, workers were able to leverage the importance of the F-16s for the war-effort into a victory.

A Raytheon facility in Arizona producing Tomahawk and Javelin missiles faced similar circumstances: while the company offered a nine-percent increase in wages, workers decided that it was not enough to offset the rising cost of healthcare (*Boston Business Journal*, 2006). Unlike Lockheed, Raytheon held firm—but after a 70 day strike that reportedly delayed delivery of missiles, the workers won additional bonuses to offset healthcare costs (*Arizona Daily Sun*, 2007; Weisman, 2006). Similarly, workers producing Army Black Hawk and Navy Seahawk helicopters bound for Iraq and Afghanistan went on strike in 2006. The delays became so concerning that government officials intervened. The Department of Defense reprimanded the company for the delays and Connecticut's congressional delegation sent a letter to union leaders and the company CEO, making it clear to both parties that, if the strike continued, "wartime requirements will render Sikorsky expendable, in favor of contracts with Boeing and Lockheed Martin" (Levine, 2006). One striker said: "The most important thing that came out of the strike is that we kind of knocked the arrogance out of [the company] a little bit. . .They thought for sure they were going to break us in a couple of days, and they didn't . . . It really set the tone for us and I think to this day Sikorsky believes that" (Soule, 2016).

We see through these examples how workers who were producing supplies for the wars in Iraq and Afghanistan saw some structural empowerment as their positions became vital to the war-effort. In these instances, workers leveraged that structural power to make substantive gains by disrupting the supply of war materials. Yet, despite the leverage that disruption yielded the workers, the specter of neoliberal war-making arrangements hung over these instances: in the Lockheed and Raytheon examples, the lack of competitors—as a result of the merger boom of the 1980s and 1990s—for the production of F-16s and missile systems, respectively, meant that the firms were only ever at risk of late delivery fees, embarrassment, and pressure from the Department of Defense. Unlike in the mid-twentieth century, when greater competition from prime contractors turned delays into existential threats, twenty-first century disruptions may have threatened military operations, but did not truly threaten company survival.

In sum, in the twenty-first century workers have faced a combination of the factors present in the earlier periods of the twentieth century. On the one hand, the restructuring associated with neoliberal war-making—especially the hollowing out of productive capacity and the overinvestment in high-tech weapons systems—yielded significant changes that have weakened workers' position vis-à-vis firms. On the other hand, like in the wars of the twentieth century, workers who are producing necessary supplies for the ongoing wars have seen some structural empowerment as their positions became vital to the war-effort, especially in the face of hollowed-out capacity. Thus, in contrast to the near-universal wartime empowerment of the twentieth century, the combination of restructuring and war has yielded a far narrower empowerment, amounting to a bifurcation between workers producing supplies needed for pressing wartime requirements and those producing supplies for non-urgent, innovative systems.[14]

Conclusion

This article has sought to make sense of three phenomena. First, it aimed to investigate the transition from a regime of mass mobilization war-making to a regime of neoliberal war-making at the point of production, identifying the role that armaments workers played in that process. Second, it endeavored to understand how the rise of neoliberal war-making transformed the structural power of armaments workers. Finally, it sought to clarify the relationship between war and armaments workers in the twenty-first century.

Table 4. Arrangements of mass mobilization and neoliberal war-making at the point of production.

	Mass mobilization war-making	Neoliberal war-making
Organization of Production	Many workers engaged in mass production	Fewer workers engaged in flexible production
Workers' Disruptive Power	High	Bifurcated
Work Stoppages	High levels of armaments workers' unrest during wartime	Low levels of armaments workers' unrest during wartime
Outcomes	Substantial, broad gains; among the vanguard of U.S. labor	Narrow gains for some armaments workers

We have seen how armaments workers were central in shaping the shift to a new regime of war-making: as armaments firms aimed to overcome the power and costliness that mass mobilization had yielded these workers, they laid the groundwork for the restructuring that would accelerate after the U.S. defeat in Vietnam. As the regime of mass mobilization war-making was abandoned at all moments in the making of war, the interest of firms (to overcome powerful and costly workers through a transformation of production) aligned with those of military officials (to overcome the constraints of mass mobilization through a transformation of the military).

This marked a fundamental change in the relationship between armaments workers and war, as military-industrial restructuring ultimately disempowered manufacturing labor. Geographical relocations of production shifted arms manufacturing out of hotbeds of labor militancy; Globalization and a merger boom reduced reliance on any one group of workers; Overinvestment in high-tech weapons systems diminished the importance of much military-industrial labor for actually existing wars. In the twenty-first century, this has meant that armaments workers, unlike during the era of mass mobilization, were not near-universally empowered by the expansion of war and are thus an unlikely vanguard for the pursuit of broad gains for the U.S. working class in general.

Nevertheless, some armaments workers still have disruptive potential at the present juncture. This was on display not only in the wartime examples above—such as those workers assembling the Black Hawk or the F-16 during the Iraq War—but also in recent disruptions during the COVID-19 pandemic. In 2020, workers at Lockheed Martin and Boeing protested their being forced to work in dangerous conditions, while workers at GE's Lynn, Massachusetts, plant organized a one-day strike—not just over their own safety conditions, but to pressure GE to swap production of armaments for the production of "life-saving ventilators the whole country so desperately needs" (Lacy, 2020). Combined with a series of strikes over pandemic health and safety conditions in Mexican *maquiladoras*, many military officials and observers saw a coming crisis due to workplace disruptions (Bacon, 2020; Gould, 2020; Sieff, 2020).

Thus, we can now return to the comparison between mass mobilization and neoliberal war-making shown in Table 1 and fill out the missing cell. Table 4 summarizes the transformation of social arrangements at the point of production as regimes of war-making shifted.

As indicated above, the transformation of arrangements associated with the rise of neoliberal war-making were not confined to the point of production, and indeed reshaped the labor relations of other moments in the making of war. The end of the draft, the rise of risk averse war, and the revolution in military logistics each interacted with the transformations at the point of production, and together these labor arrangements comprise neoliberal war-making. Indeed, insofar as flexibilization, centralization, outsourcing, and capital-intensity put strain on military supply chains, then the rise of neoliberal war-making has enhanced the disruptive power of *all* workers located at strategic chokepoints of war—not just those producing urgently-needed weapons, but also those

laboring in logistics networks. Great work is already being done in this area (e.g. Moore, 2019), but further investigation is required.

In sum, the shift from mass mobilization to neoliberal war-making eroded many structural sources of armaments workers' leverage but it did not eliminate them. These workers have demonstrated their willingness to disrupt war-making for improvements in their own conditions. But also, as suggested by the GE strike to swap production of life-destroying armaments for life-saving ventilators during the COVID-19 pandemic, there may yet be openings to incorporate these workers and their disruptive power into *broader* struggles for the protection of human life. Indeed, focusing energies on the sources of armaments workers' disruptive power that still exist in the twenty-first century may prove fruitful for those aiming to organize not only for workers' livelihoods, but also against endless war.

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ORCID iD

Corey R Payne https://orcid.org/0000-0001-9699-2646

Notes

1. Indeed, by leveraging their power in this era, labor unions helped forge the modern military-industrial complex, imbuing it with their own vision of military spending, in which defense monies could be harnessed to promote full employment. Union leaders were granted "substantial, substantive. . . participation" in war policy deliberations. The successes of labor in promoting both warfare and general welfare in these formative years of the modern military-industrial complex had lasting effects, as workers and their representatives endeavored "to commandeer the growing defense establishment—to make it as responsive to the goals of promoting employment and addressing social needs as to fighting the Cold War" (Wehrle, 2003: 525–529).
2. The notable exception has been the excellent work on the revolution in military logistics, in which workers and their struggles have played a central role (Cowen, 2014; Moore, 2019).
3. This undoubtedly shares similarities with concepts such as (Moskos et al., 2000) "forms of military organization" (which aims to understand the arrangement of the armed forces and civil-military relations) or Hooks and MacLauchan (1992) "institutional foundations of warmaking" (which aims to understand "the nature of and relations between civilian and military institutions within the state" and the factors that influence them). However, in contrast to these frameworks, the concept of regimes of war-making emphasizes the basic social relations comprising these institutions (e.g. labor) rather than leaving them in the shadows.
4. While the term "neoliberal" is used in many ways in the literature, in this article it refers to the character of *material* transformations associated with the broader world-economic restructuring of the late twentieth century.
5. For accounts of changing associational power in the aerospace industries, see, e.g. Danford et al. (2002, 2007), Belman and Voos (1993), Erickson (1992) and Karier (1987).
6. This paper's emphasis on the structural relationship between war and labor, as opposed to the relationship between war and workers' associational power, is the primary reason why the labor actors are generally referred to as *workers* rather than as unions.

7. Data on the Aircraft and Parts industry are available in the Appendix 1. Because of the significant civilian component of this industrial sub-category as reported by BLS, it has not been included in the main text. Nonetheless, it informed the second step of the data collection, and findings from my review of documents related to strikes in the Aircraft and Parts industry are presented in the following sections.
8. When excluding any work stoppage involving less than 1,000 workers from the FMCS data, the BLS and FMCS data are matching sources for the overlapping period of 1993 to 2004. I present them combined in figures and tables.
9. The statistics include "all work stoppages occurring in the continental United States involving as many as six workers and lasting the equivalent of a full day or shift or longer."
10. As noted above, Table 2 (and Figure 1) only present work stoppages in the Ordnance industry (involving any number of workers), while Table 3 (and Figure 2) present all work stoppages in the armaments industries (involving 1,000 or more workers). It is for this reason that the 1980s and 1990s appear to have a higher number of worker-days lost that the earlier decades. Other categories for the first period have not been presented in this analysis because the BLS data are not sufficiently disaggregated.
11. Markusen and her colleagues downplay the role of labor, pointing to an insignificant relationship between unionization and geographical (re)location of military industry. I contend that the presence or absence of a union *alone* is not sufficient for understanding labor's role in geographical shifts in production—especially not in an industry with long-standing agreements between unions and firms to reduce work stoppages in exchange for regular increases in wages and benefits. Instead, it is necessary to turn one's gaze toward the *disruption* caused by organized workers—i.e. toward workers' strikes—to understand labor's role.
12. For example, a large strike at General Dynamic's Electric Boat Division in Connecticut in 1965 that won significant concessions from the company was followed by an unauthorized wildcat strike in 1968 and a massive 149-day strike in 1975. In response, Electric Boat opened a new facility in Rhode Island using non-unionized workers (*Hartford Courant*, 1968; Knight, 1975; Streeter, 2020; U.S. BLS, 1966).
13. This finding closely tracks to the patterns of labor unrest more generally that Beverly Silver (2003) identified in her analysis of "spatial fixes." As capital tries to flee powerful, expensive, and unruly workers, it tends to spark "backlash resistances" by the workers' whose livelihoods are being destroyed by the relocation. But, at the same time, the epicenter of labor militancy tends to follow capital investment, even as capital attempts to flee it. While capital leaving "unmakes" existing working classes, capital arriving "creates" new ones. The arrival of production to new locales draws together laborers as a new class of workers and tends to create strong new labor movements at each favored site of capitalist production, as labor-capital contradictions are reproduced (Silver, 2003: 3). In other words, despite the disempowerment that comes with such restructuring, Silver finds that wherever capital goes, labor-capital conflict follows.
14. This bifurcation is the result of U.S. military operations as much as it is the regime of war-making. The Biden administration's increasing involvement in the war in Ukraine, as well as its continuation of Trump administration policies of belligerence toward China, may well mean that weapons systems long designed as provocations and deterrents but never used in actual combat could find their use if escalations continue their present course. The analysis presented in this article suggests that such a course would lead to a broader segment of armaments workers seeing an increase in their disruptive power. But such a conflict would pose such an extraordinary threat to humanity that it is not clear that armaments workers would have a chance to benefit from their new-found leverage.

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Appendix 1

U.S. military expenditures

Figure 7 presents U.S. military expenditures from 1949 to 2021 in millions of U.S. dollars (constant 2020). In addition to waves of increases during wars—Korea, Vietnam, and the War on Terror—we also see a dramatic wave of spending starting in the 1980s, corresponding to Reagan's "Second Cold War" arms race with the Soviet Union. Beneath these waves of heightened spending, there is a secular increase in military expenditures across the entire time series.

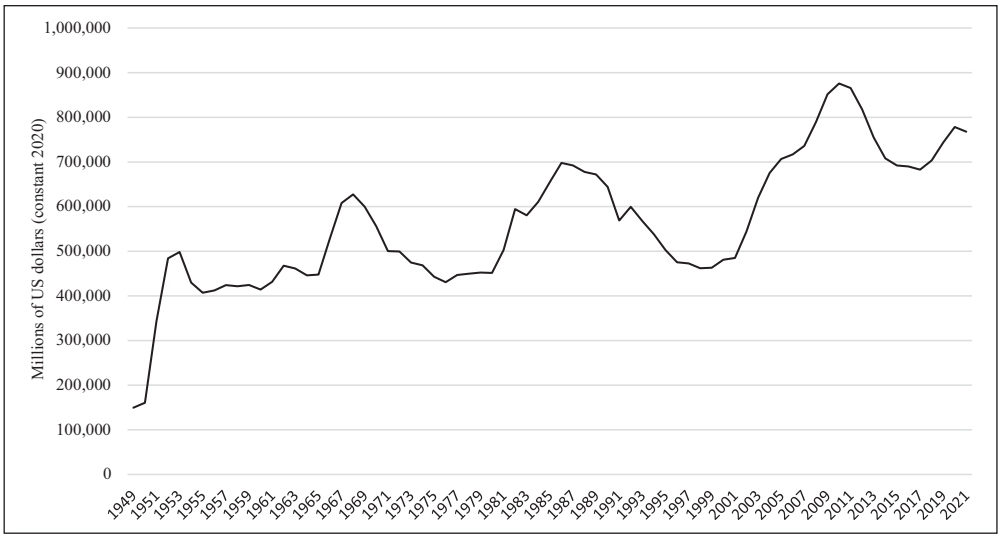

Figure 7. U.S. military expenditures, 1949-2021 (millions of U.S. dollars, constant 2020).
Source: Stockholm International Peace Research Institute (2021).

Work stoppages in the Aircraft and Parts industry, 1942-1979

A review of work stoppages in the Aircraft and Parts industry from 1942 to 1979 informed the historical analysis above. These figures were excluded from the main text because of the significant civilian component of the sub-industrial category.

From 1942-1979, the BLS reports 978 work stoppages by workers in the Aircraft and parts industry, accounting for over 20 million worker-days lost. As shown in Table 3 below, periods of military buildup corresponded to higher levels of worker militancy in the aircraft and parts industries.

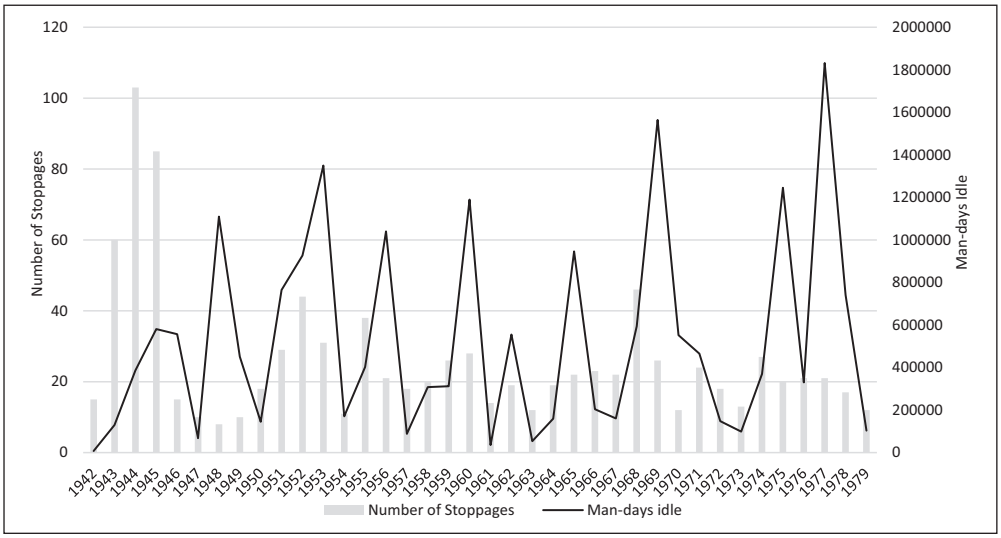

Figure 8. Work stoppages in the Aircraft and Parts industry, 1942 to 1979.
Source: Author's compilation from BLS annual reports.

Table 5. Average number of work stoppages and worker-days lost per year in the Aircraft and Parts industries.

Period	Years	Work stoppages	Worker-days lost
World War II	1942-1945	66	276351
Post-War	1946-1949	11	546475
Korean War	1950-1953	31	796750
"Golden Age"	1954-1964	21	392409
Vietnam War Ramp-Up	1965-1969	28	693980
Vietnam War Draw-Down	1970-1975	19	480133
Post-Vietnam Years	1976-1979	18	751825

Source: Author's compilation from BLS annual reports.